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environmental restoration project

A Department of Energy
Environmental Cleanup Program

Environmental Restoration Project
Standard Operating Procedure

for:

Sample Management Office: Receiving and Shipping Analytical Samples

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

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Sample Management Office:
Receiving and Shipping Analytical Samples

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NOTE: Environmental Restoration (ER) Project personnel may produce paper copies of this procedure printed from the controlled-document electronic file located at http://erinternal.lanl.gov/documents/Procedures/sops.htm. However, it is their responsibility to ensure that they are trained to and utilizing the current version of this procedure. The author may be contacted if text is unclear.

1.0 PURPOSE

This standard operating procedure (SOP) describes the process for receiving samples into, and shipping samples from, the Sample Management Office (SMO) to commercial analytical laboratories. This procedure takes effect when the samples reach the SMO.

2.0 TRAINING

2.1 Self-study and on-the-job training will be employed to train all users of this SOP, and the training will be documented in accordance with QP-2.2.

2.2 The **SMO Project Leader** is responsible for ensuring the proper implementation of this procedure, will ensure that relevant SMO staff members have an understanding of the process detailed in this procedure, and will ensure that relevant SMO staff members have completed all applicable training assignments in accordance with QP-2.2.

3.0 DEFINITIONS

3.1 *Centralized Data Management (CDM)* — The ER Project organization that is responsible for creating the necessary paperwork and database information for ER Project field personnel.

3.2 *Chain of custody (COC)* — Demonstration of control and possession of information or materials that are controlled because of sensitivity or to maintain integrity. COC is maintained when an item is in your possession, or is in your view after being in your possession, or is in your possession and secured where unauthorized persons do not have access. The COC process provides confidence and documentation in analytical data integrity by establishing the traceability of the data from the time of receipt, through processing, to final maintenance as a record.

3.3 *Customer* — Any individual who delivers samples to the SMO. These individuals may be ER (personnel who use an ER Project program cost code) or non-ER personnel.

3.4 *Controlled-access area* — An area within the Field Support Facility (FSF) specifically designated for management and storage of analytical data record packages and environmental samples. This area is accessible by escort with designated FSF/SMO staff members only. Designated FSF/SMO staff members are listed on the entrance to the controlled-access area. Any analytical data record package(s) that leave the controlled-access area will be controlled in accordance with COC requirements.

3.5 *Field data group (FDG) number* — A number that is assigned to a particular batch of samples, and used as an administrative aid for manually tracking samples until those samples are assigned and tracked by a request number (RN). The FDG is also used for identifying the personnel who deliver the samples.

3.6 *Request number* (RN)— A unique identification number assigned to a sample, or group of samples, sent to an analytical laboratory for analysis.

3.7 *Sample classification* — Samples may be classified as “Environmental” (air, soil, water, or other media material) that are collected from streams, wells, etc; “Hazardous Material” (air, soil, water, or other media) collected from waste sites that are known or thought to meet the definition of a hazard class as defined in 49 CFR 171.8; or “Radioactive Material” (any material having a specific activity greater than two (2) nanocuries per gram (nCi/g)).

3.8 *Sample Management Office (SMO)* — The SMO is part of the FSF and is the organization responsible for receiving and shipping ER Project samples. SMO staff handle the receipt, coordination, and temporary records management of ER Project analytical data record packages.

3.9 *Sample management processing system* — A software program that allows SMO staff members to electronically create shipping documentation for samples.

3.10 *Specific activity* — The activity of the radionuclide per unit mass of that nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the activity per unit mass of the material.

4.0 BACKGROUND AND PRECAUTIONS

It is the responsibility of the customer to follow all Federal, State, and Laboratory transportation requirements in bringing samples to the SMO (see Laboratory Implementation Requirements LIR 405-10-01.1).

In general, samples obtained for the ER Project are expected to have low concentrations of potential contaminants, although higher concentrations may be

present in some cases. These low-concentration samples that do not qualify as Department of Transportation (DOT) hazard class definitions are classified as environmental samples and are not subject to DOT regulations for the shipment of hazardous materials.

SMO staff will comply with the Laboratory/General Services Administration contract when operating the Federal Express (FedEx) Powership system.

5.0 EQUIPMENT

A list of suggested equipment and supplies needed to implement this procedure is provided below:

- standard shipping and packaging materials (e.g., scissors, filament tape, packaging tape, custody seals, and bubble wrap);
- standard sample shipping containers (e.g., ice coolers with blue Ice); and
- FedEx scale and FedEx PowerShip computer/labeler.

6.0 PROCEDURE

Note: Deviations from SOPs are made in accordance with QP-4.2.

Note: SMO staff members are encouraged to wear gloves and laboratory overcoats when handling samples.

6.1 Receiving Samples into the SMO

6.1.1 An **SMO staff member** will ensure that the customer completes the SMO Access Log upon entering and leaving the SMO.

6.1.2 The **SMO staff member** determines if the customer works for an ER or non-ER program.

6.1.2.1 ER customers provide samples, the “Electronic Follower” diskette, a Field Chain of Custody/Request for Analysis form (Attachment A, hereafter referred to as a field COC), and radiological (RAD) screening information.

6.1.2.2 Non-ER customers should provide samples, a field COC (they usually use their own format), and RAD screening information.

6.1.3 The **SMO staff member** checks for RAD screening documentation.

6.1.3.1 If RAD screening documentation isn’t required or has not yet been generated, the **customer** completes the appropriate section of the RAD Screening Data Release form (Attachment B).

6.1.3.2 If RAD screening documentation is required, but not completed, the **SMO staff member** will receive and hold the

samples, but can not ship the samples until the RAD screening documentation is received. It is the customer's responsibility then to ensure that the SMO receives the appropriate RAD screening documentation.

6.1.3.3 If samples are determined to be hazardous, the **customer** will contact the BUS-4 Mobile Packaging Van Service (7-4127) for shipment preparation. The customer will coordinate with SMO staff to obtain shipping papers BUS-4 will use to ship the samples.

Note: It is the customer's responsibility to identify any RAD hazards. The SMO does not handle any RAD hazardous materials.

6.1.3.4 All of the information/instructions provided in Section 6.1.3 also *applies* to non-ER customers.

6.1.4 The **SMO staff member** assigns an FDG number to the incoming samples. This number is entered into the three-ring binder located in the sample check-in area and is marked on a manila folder (the SMO shipping folder). The **SMO staff member** then asks the customer if they have any additional pertinent documentation (i.e., HE or any RAD screening); and places this documentation into the manila folder.

6.1.5 The **SMO staff member** checks that a field COC accompanies any set of samples that are delivered to the SMO. Samples will not be accepted by SMO staff unless accompanied by a field COC. Verify that the information printed on the field COC matches the information listed on the sample container.

6.1.5.1 If the field labels and field COC have conflicting "sample numbers," "cut numbers," or "COC numbers," the **SMO staff member** will not accept the samples and will instruct the customer to contact CDM to remedy any conflicting information. Until the field COC and field labels are rectified, the customer retains physical custody of the samples.

Note: It may be possible to manually fix some problems (e.g., cross-out the number for a nonexisting sample) by making the correction and initialing and dating that correction, but these changes are kept to a minimum because SMO personnel will have to manually change the electronic database.

6.1.5.2 In the case of non-ER customers, when samples and COC numbers do not match, **customers** are required to leave the SMO and fix the problem, or if the problem is minor, the

customer may make a manual correction. Be sure that the correction is initialed and dated.

6.1.6 The **SMO staff member** ensures that a custody seal is on each sample container and that the seal is intact. Containers with a broken seal cannot be accepted until corrected. Any broken or cracked containers can not be accepted.

6.1.6.1 This requirement *applies* to non-ER customers as well.

6.1.7 When the appropriate information on the field COC coincides with the information provided on the sample container labels and the sample containers have a custody seal, the **SMO staff member** oversees the completion of the field COC.

6.1.7.1 The **customer** completes the “Relinquished by” block, and fills in the date and time (in military format, e.g., *1730 hrs*) of the field COC.

6.1.7.2 The **SMO staff member** signs the “Received by” block of the field COC.

6.1.7.3 The **SMO staff member** places the “white” copy of the field COC into the FDG-labeled manila folder (discussed in Section 6.1.4)

6.1.7.4 The **SMO staff member** gives the customer the “yellow” and “pink” copies.

6.1.7.5 The **SMO staff member** ensures that the FDG-labeled manila folder is placed in the SMO receiving office for processing.

6.1.7.6 Non-ER customers *are required* to have similar paperwork.

6.1.8 The **SMO staff member** checks that a floppy diskette accompanies the field COC.

6.1.8.1 Loads the floppy diskette into the computer and checks to see if the computer rejects the floppy diskette data for any reason (e.g., duplicate sample numbers, duplicate COC numbers, or incorrect format).

6.1.8.2 If there are any problems with the floppy diskette, contact CDM and ask that a corrected floppy diskette be sent to the SMO.

6.1.8.3 Section 6.1.8 *does not apply* to non-ER customers.

6.1.9 After the **SMO staff member** checks the samples in (the sample-container label matches with the field COC), place the samples in a

plastic bin (also labeled with the FDG number) and place the plastic bin into one of the SMO refrigerators.

Note: Volatile organic analysis (VOA) samples are always placed in separate bins and stored in the VOA refrigerator. ENCORE samples are placed in a plastic bin and the bin is stored in the small freezer.

6.2 Generating Shipping Documentation and Updating the Database

Note: **SMO staff members** are responsible for the completion of the remaining sections of this procedure.

6.2.1 Take the FDG-numbered manila folder (the SMO shipping folder initiated in Section 6.1.4) and start the SMO Sample Processing System.

6.2.2 Follow the ER Project SMO Sample Processing System database menu to generate the Analysis Request Letter (Attachment C) and the Chain of Custody Document Number (Attachment D). Completing this operation updates the database.

6.2.2.1 For non-ER customer sample processing, go to database main menu and select “Manual Entry.” Essentially the same menu items are chosen, however, all variables are hand entered.

Note: If the system crashes, or fails to work properly, contact the SMO System Administrator or CDM Task Leader.

6.2.3 When the shipping documentation is complete proceed to Section 6.3 for the packaging of the samples.

6.3 Packaging Samples

Note: This section can not be completed until all RAD screening results are received at the SMO unless the RAD Screening Data Release form indicates that RAD screening is not required.

6.3.1 Select a shipping cooler and line the bottom with a layer of blue ice. (There are instances when ice is not required. SMO staff is cognizant of those types of samples)

6.3.2 Place a single layer of large bubble wrap on top of the blue ice.

6.3.3 Wrap and tape all soil samples (either in poly bottles or glass bottles) with a single layer of small bubble wrap.

6.3.4 For water samples in glass bottles, place the container in a poly bag and tape it shut, then wrap the bottle in two layers of small bubble wrap. For water samples in poly bottles, wrap and tape the container with a single layer of bubble wrap.

6.3.5 Place the wrapped sample containers in a cooler.

6.3.5.1 *Always* place all water sample canisters *upright* within the shipping cooler. Fill in spaces with bubble wrap and/or blue ice.

6.3.5.2 *Do not* place VOA water containers next to the blue ice (they tend to freeze and break).

6.3.6 Place several (usually 5 or 6) blue ice units on top of the sample containers.

Note: Be aware of seasonal variations. Less ice is used in winter; more is used on hot summer days or if the containers contain water samples.

6.3.7 Place a layer of large bubble wrap over the blue ice.

6.3.8 Sign the appropriate shipping documents and handle the appropriate copies as described below:

- for the Field Chain of Custody/Request for Analysis form (Attachment A),
  - give one copy to the customer and
  - place the original into the SMO shipping folder (initiated in Section 6.1.4);
- file the RAD Screening Data Release form (Attachment B) in the SMO shipping folder;
- for the Analysis Request Letter (Attachment C),
  - send one copy to CDM;
  - fax one copy to the corresponding analytical laboratory;
  - give one copy to the customer, as assigned on Attachment A;
  - place one copy in the SMO shipping folder; and
  - ship the original with the samples; and
- for the Chain of Custody Document Number (Attachment D),
  - ship the original copy with samples;
  - place one copy into the SMO shipping folder; and
  - fax one copy to the corresponding analytical laboratory.

6.3.9 Place the original copy of

- the Chain of Custody Document Number,
- the RAD Screening Data Release Form, and
- the Analysis Request Letter

in a poly bag, and place poly bag inside the packed sample cooler.

6.3.10 Close and seal each cooler with three complete wraps of strapping tape. Wrap the tape around the hinges on either end.

6.3.11 Initial and date four red custody seals. Place the red seals on each side of the cooler—covering the seam between the lid and bottom portion of the cooler with each seal.

6.3.12 Using the FedEx scale, weigh the cooler and round its weight up to nearest pound (e.g. 16.4 becomes 17). *Make sure* that the scale reads 0.0 before weighing the cooler. If it does not, press the re-zero button until you get the 0.0 reading.

6.3.13 Make a shipping label using FedEx Powership (see Section 6.4) system.

6.3.14 Attach the shipping label to the cooler, and place cooler at pickup point.

6.4 Making a FedEx Powership Label

Note: FedEx maintains the FedEx Powership system. In case of malfunction, contact FedEx. The telephone number is on the machine.

6.4.1 At the Powership screen, select either the name of the analytical laboratory or their code from the “Code” pull-down menu. This action fills in the required destination information. If the code or name does not appear on the pull-down menu, manually enter the name and mailing address of the analytical laboratory to which you want the shipment to go.

Note: A hardcopy of the business code list and address is also posted above the computer. The SMO Task Leader maintains this list.

6.4.2 Enter the weight of the cooler in the “Weight” field. The “Service” field will automatically be filled in.

6.4.3 Tab to the “Package Type” field and select “1-Your Packaging,” and skip the size field. The “Payment:” field will automatically be filled in and it should indicate “1-Bill Sender.”

6.4.4 Click on “1-Bill Sender” and a configured references (CHARGE CODE) pop-up screen appears.

6.4.5 Enter the appropriate code (for ER Project work this is usually 6E20 plus the Project Cost Code obtained from Attachment D) and click “OK.”

6.4.6 Skip the rest of the input fields and click on the “Ship Package (F10)” button. Labels will then be printed automatically. See Section 6.4.8 for Saturday deliveries.

6.4.7 Attach the label to the shipping cooler (usually a mylar tag handle is provided for this step).

6.4.8 For Saturday deliveries,

- call the specific analytical laboratory to ensure they will accept a Saturday delivery;
- place “Saturday Delivery” labels on cooler (one label per top and sides of cooler);
- choose the correct delivery method in Powership before printing the label; and
- at the end of label printing, but no earlier than 3 p.m., close Powership by selecting “FedEx End of Day” button. This button is at the upper right-hand corner of the Powership screen.

Note: There are no shipments on holidays.

6.4.9 When FedEx arrives they will scan the shipping labels and pick up the sample coolers.

6.5 Sending Notification Faxes to Analytical Laboratories

6.5.1 After FedEx has picked up coolers, fax Attachments A, C, and the RAD screening information (obtained from the American Radiation Services lab) to the respective analytical laboratories.

6.5.1.1 When a subcontractor to a primary analytical laboratory is used, send a duplicate fax of the pertinent paperwork to that subcontractor’s prime lab.

Note: The lavender folder that contains the fax templates is above the SMO fax machine. The SMO Task Leader maintains this folder.

6.6 Cleaning Sample Coolers

6.6.1 Don gloves and an overcoat (optional).

6.6.2 Empty the blue ice from the cooler to a countertop.

6.6.2.1 Examine the ice packs.

6.6.2.2 Discard any broken containers.

6.6.3 Clean the individual blue ice units by spraying with germicide, and then wipe them clean.

6.6.4 Spray the inside of each cooler with germicide, and wipe it clean.

6.6.5 Fill the large trays with blue ice and place them in the two inside freezers (labeled). This blue ice is normally used for shipments.

6.6.6 Pack about 15 units of blue ice into each cooler and return them to the outside walk-in freezer.

6.6.7 Store the coolers in the freezer in such a way that the clean coolers are not given out for at least 24, preferably 48, hours.

6.6.8 Store the trays in the freezer in such a way that the new blue ice units are not used for sample shipment for at least 24, preferably 48, hours.

7.0 REFERENCES

The following documents have been cited within this procedure:

QP-2.2, Personnel Orientation and Training

QP-4.2, Standard Operating Procedure Development

QP-4.4, Record Transmittal to the Records Processing Facility

ER-SOP-15.16, Hazardous Sample Receiving and Shipping

LIR405-10-01.1, Packaging & Transportation

8.0 RECORDS

SMO staff members are responsible for submitting the following records (processed in accordance with QP-4.4) to the Records Processing Facility.

8.1 Field Chain of Custody/Request for Analysis

8.2 RAD Screening Data Release

8.3 Chain of Custody Document Number

8.4 Analysis Request Letter

9.0 ATTACHMENTS

The document user may employ documentation formats different from those attached to/named in this procedure—as long as the substituted formats in use provide, as a minimum, the information required in the official forms developed by the procedure.

Attachment A: Example of a Field Chain-of-Custody/Request for Analysis form (1 page)

Attachment B: RAD Screening Data Release form (1 page)

Attachment C: Example of a Analysis Request Letter (1 page)

Attachment D: Example of a Chain of Custody Document Number (1 page)

Example of a Field Chain of Custody/Request for Analysis Form

COC:

Los Alamos National Laboratory Environmental Restoration (Los Alamos, NM 87544)

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

Page 1 of ___

Technical Area:	**Send Lab Report to:**	**Focus Area Leader:**
Date:	**LANL Destination:** **LANL Contact:** **LANL Mail Stop:**	**Turnaround:** **Lab Report Required:** **Charge Code:**

Relinquished by: **(Signature):** **Affiliation:**	Date:	**Relinquished by:** **(Signature):** **Affiliation:**	Date:	**Relinquished by:** **(Signature):** **Affiliation:**	Date:
Received by: **(Signature):** **Affiliation:**	Time:	**Received by:** **(Signature):** **Affiliation:**	Time:	**Received by:** **(Signature):** **Affiliation:**	Time:

POSSIBLE HAZARD IDENTIFICATION: (please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances): Radiological ____ Highly Toxic ____ Flammable ____ Skin Irritant _____ Non-hazard ___ Other ____	**SCREENING METHOD:** **SAMPLE DISPOSAL:**

Comments:

Field Sample	Unique #/ID	Cont. ID	Date & Time Collected	Sample Container Volume/Material	Matrix	Preserv.	ANALYSIS REQUESTED: (SMO Order Codes)	REMARKS: (Conditions of Receipt, etc.)

Original – LANL Destination Yellow – CDM Pink – FTL

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RAD Screening Data Release

The following samples were delivered to the Sample Management Office (SMO) without screening data (list sample numbers).

These samples will not be shipped until RAD screening data documentation arrives at the SMO. I understand that it is my responsibility to ensure this information arrives at the SMO in a timely manner. If holding times are missed because RAD screening data does not arrive, I will pick up the subject samples.

The following samples do not require RAD screening data for the reason(s) stated (list samples numbers).

Reason:

Name:_____ Date: _____
(Print name, then sign)

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Example of an Analysis Request Letter

Tuesday, May 04, 1999

REQUEST NUMBER:
ANALYSIS TYPE:

Los Alamos
National Laboratory

ATTN: Lab Contact
Lab Name
Lab Address

Please analyze the enclosed samples according to the schedule indicated:

These samples are on:

SHIP DATE: LANL Request Number:
REPORT DATE: Per Agreement Number:
TURN AROUND REQ'D: Project Cost Code:
RAD SCREENING:
COMMENTS:

LANL ER SMO CONTACT: Joylene Valdez MS H865 505.665.9968
Signature: _____

SAMPLE ID	CONT ID	CONTAINER DESCRIPTION	ANALYSIS ORDER CODE	PRESERVATIVE	MATRIX

Final Page of REQUEST NUMBER Page 1 of _____

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Los Alamos
Environmental Restoration Project

Example of a Chain of Custody Document Number

Tuesday, May 04, 1999

CHAIN OF CUSTODY DOCUMENT NUMBER:

Los Alamos
National Laboratory

REQUEST NUMBER:
ANALYSIS TYPE:

ATTN: Lab Contact
Lab Name
Lab Address

SAMPLE ID	CONT ID	CONTAINER DESCRIPTION	ANALYSIS ORDER CODE	PRESERVATIVE	MATRIX

Final page of CHAIN OF CUSTODY DOCUMENT FOR REQUEST NUMBER xxxx Page ____

Relinquished by:	**Date**	**Time**	**Relinquished by:**	**Date**	**Time**
SIGNATURE/CO.			SIGNATURE/CO.		
SIGNATURE/CO.			SIGNATURE/CO.		
SIGNATURE/CO.			SIGNATURE/CO.		

Received for DISPOSAL by: **Date** **Time** **Remarks:**

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